REMARKS

Claims 1 through 8 are pending in this application, of which claim 8 stands withdrawn from consideration pursuant to the provisions of 37 C.F.R. §1.142(b). Accordingly, claims 1 through 7 are active, with claims 1 and 3 being independent claims.

Claims 1 and 7 have been amended. Care has been exercised to avoid the introduction of new matter. Indeed, adequate descriptive support for the present amendment should be apparent throughout the originally filed disclosure as well as the originally presented claims. Applicants submit that the present Amendment does not generate any new matter issue.

Claim Objection

The Examiner objected to claim 3 asserting its improperly depended upon claim 1.

In the exposition of the objection, the Examiner asserted that since the degassing and thermal shrinking steps do not have overlapping temperature ranges, they can not be performed simultaneously. Applicants traverse.

Firstly, claims are not considered in a vacuum but in light of the written description of the specification wherein it is disclosed that the first heating step actually comprises two stages. During the first stage, gas is removed. During the second stage, thermal shrinking is effected. In this respect, it matters not whether the ranges overlap or not. What matters is one having ordinary skill in the art would have understood that the first heating step comprises two different stages. Incidentally, the upper temperature

limit of 1300°C of the gas removal step coincides with the lower limit of 1300°C of the thermal shrinking step.

At any rate, claim 3 has been placed in independent form, thereby overcoming the stated basis for the imposed rejection. Accordingly, withdrawal of the rejection is solicited.

Claims 1 through 7 were rejected under the second paragraph of 35 U.S.C. §112.

In the statement of the rejection, the Examiner asserted that various expressions, such as "thermal shrinkage" vitrification" and "vitrify", render the claimed invention indefinite. The Examiner also asserted that since glass is already virtuous, it is impossible to vitrify a preform. This rejection is traversed.

Indefiniteness under the second paragraph of 35 U.S.C. §112 is a **question of law,** not form. *Personalized Media Communications LLC v. U.S. International Trade Commission, 161 F.3d 696, 48 USPQ2d 1880 (Fed. Cir. 1998); Tillotson, Ltd v. Wlaboro Corp., 831 F.2d 1033, 4 USPQ2d 1450 (Fed. Cir. 1987); Orthokinetics Inc. v. Safety Travel Chairs Inc., 806 F.2d 1565, 1 USPQ2d 1081 (Fed. Cir. 1986).* Accordingly, in rejecting a claim under the second paragraph of 35 U.S.C. §112, the Examiner must provide a basis and fact and/or cogent technical reasoning to support the ultimate legal conclusion that one having ordinary skill in the art, with the supporting specification in hand, would not be able to reasonably ascertain the scope of protection defined by a claim. *In re Okuzawa, 537 F.2d 545, 190 USPQ 464 (CCPA 1976).* Significantly,

consistent judicial precedents holds that reasonable precision in light of the particular subject matter involved is all that is required by the second paragraph of 35 U.S.C. §112. *Zoltek Corp. v. United States, 48 Fed. Cl. 240, 57 USPQ 2d 1257 (Fed. Cl. 2000); Miles Laboratories, Inc. v. Shandon, Inc., 997 F.2d 870, 27 USPQ2d 1123 (Fed. Cir. 1993); North American Vaccine, Inc., v. American Cyanamid Co., 7 F.3d 1571, 28 USPA2d 1333 (Fed. Cir. 1993); U.S. v. Telectronics Inc., supra; Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 231USPQ (Fed. Cir. 1986).* Applicants stress that claims must be interpreted as one having ordinary skill in the art would have interpreted the claims in light of and consistent with the supporting specification. *Zoltek Corp. v. United States, supra; Miles Laboratories, Inc. v. Shandon, Inc. supra.* Further, there is no need to set forth in the specification with excruciating detail that which is already known to one having ordinary skill in the art. *In re Howarth, 654 F.2d 103, 210 USPQ689 (CCPA 1981).*

In applying the above legal tenets to the exigencies to this case, Applicants submit that one having ordinary skill in the art would have no difficulty understanding the scope of the claimed invention, particularly when reasonably interpreted in light and consistent with the written description of the specification. *Miles Laboratories, Inc. v. Shandon, Inc. supra.* Specifically, it should be apparent from page 1 of the written description of the specification, lines 12 et. seq., that the present invention constitutes an improvement over a prior method divulged in Japanese Unexamined Patent Application Publication No. 6-256035, an equivalent English language version (Ito et al.) having been cited in the Information Disclosure Statement filed and apparently considered by the Examiner by virtue of the initial placed opposite Ito et al. on the Form PTO-1449 returned with the

Office Action. The present invention stems from a recognition that variation in the outer diameter in the longitudinal direction occurs to an undesirable degree in a preform having a length of 1000 mm or more which is significantly affected by the weight when vitrification or consolidation is implemented at a temperature of 1490°C to 1600°C. Applicants also discovered in that when the vitrification temperature is lower than 1490°C and when the amount of heating time is less than one hour, both ends of the preform are not vitrified.

The present invention constitutes an improvement over such a prior art technique by conducting vitrification within the temperature range of 1400°C to 1480°C for a period of 70 minutes or more. This concept, which is neither disclosed nor suggest in the prior art, appears in claims 1 and 3.

Given that backdrop, it is not apparent why one having ordinary skill in the art would somehow have been confused as to the scope of the claimed invention. In this respect, Applicants would again stress that the present invention constitutes an improvement over Ito et al., and the patent to Ito et al. was examined and allowed by the same Examiner as in the present application who apparently recognized the meaning of thermal shrinking which would correspond to the "heating step of shrinking the body" appearing in claim 1 of Ito et al. Applicants would further note that the ultimate heating step of the Ito et al. effects vitrification or consolidation, as those terms appear to be used interchangeably, noting the ultimate sentence of the Abstract of Ito et al.

Applicants would further respond by clarifying that as employed in the specification, the expression "soot preform" denotes piled up glass, i.e., fine particles of soot which is not transparent; whereas, a glass preform is transparent. According to the

present invention, the "soot preform" is vitrified and converted into a "glass preform". During vitrification, the preform is converted into transparent glass. The claims have been amended, therefore, the clarify that it is the "soot preform" that is being heated.

"Thermal shrinkage" occurs do to sintering of the soot body as observed by the Examiner. Sintering of a low-density glass, such as a soot preform of the present invention, is discussed in Scherer and Bachman, J.An and Ceram. Soc., Vol. 60, No. 5-6, 239-243, copy of which is submitted herewith as Exhibit A for the Examiner's convenience. According to Sherer et al., the relative density (ρ / ρ_s) depends on η ($t - t_o$). See Fig. 1. Here η becomes ten times larger than a temperature increase of 100°C (Fig. 2). Then there is a temperature region in which a volume decreases but a transparent glass body can not be produced in a practical amount of time. Thus, it is within the first heating step that thermal shrinkage is implemented and set forth in claims 1 and 3.

Based upon the foregoing, Applicants submit that the one having ordinary skill in the art would have no difficulty understanding the scope of the claimed invention, particularly when reasonably interpreted in light and consistent with the written description of the specification which is judicial standard. *Miles Laboratories, Inc. v. Shandon, Inc. supra.* Applicants, therefore, submit that the imposed rejection of claims 1 through 7 under the second paragraph of 35 U.S.C. §112 is not legally viable and, hence, solicit withdrawal thereof.

Applicants comments on the Examiner's reason for not rejecting the claims over prior art

Applicants submit that the degassing step and shrinking step are different stages of the first heating step. One having ordinary skill in the art would have recognized that Applicants' contribution stems from the discovery of problems attendant upon prior art practices, as discussed at page 2 of the written description of the specification, line 17 through page 3, line 3. Specifically, Applicants discovery that a variation in the outer diameter in the longitudinal direction increases when an optical fiber glass preform having a length of 1000 mm or more, which is significantly affected by the weight thereof, is treated at it's a high temperatures such as 1490°C to 1600°C. Applicants also discovered that if the temperature is lowered below 1490°C, and heated for one hour or less, vitrification is not complete. Applicants address and solve that problem by conducting vitrification at a temperature of 1400°C to 1480°C, thereby avoiding undue variations in the outer diameter along the longitudinal direction as demonstrated in the examples in the specification, and also specify that such vitrification is conducted for a period of 70 minutes or more to ensure complete vitrification. That concept is not suggested by the prior art, noting that the problem addressed and solved by the claimed invention is an indicium of nonobviousness. *Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990); In re Newell, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989); In re Nomiya, 509 F.2d 566, 184 USPQ 607 (CCPA 1975).*

Based upon the foregoing, Applicants submit that claims 1 through 7 are in clear condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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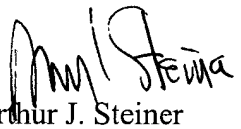

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